Study of flagellin profiling in multidrug resistant *Pseudomonas aeruginosa* (MDRPA) isolated from burn wound infections, Tehran, Iran

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ABSTRACT

Nosocomial infections of multidrug-resistant *Pseudomonas aeruginosa* (MDRPA) are a growing concern in hospitalized patients in burn centers. The aim of this study was to investigate the flagellin profiling and antibiotic susceptibility of *P. aeruginosa* isolated from burn wound infections. During 8 month study, 73 clinically *P. aeruginosa* isolates collected from patients hospitalized in burn ward. *P. aeruginosa* isolates were identified using standard laboratory procedures. In vitro susceptibility of clinical isolates of *P. aeruginosa* to 6 antimicrobial agents were investigated by Clinical and Laboratory Standards Institute (CLSI 2012) Kirby-Bauer disk diffusion assay. The frequency of different type of flagellin was investigated by using specific primers and by PCR method. The resistance rates of our isolates to 6 tested antimicrobial agents were relatively high. Imipenem has good activity while tobramycin and ciprofloxacin do not have any effect on *P. aeruginosa* isolates. Of 73 isolates 59 (80.8%) were multidrug resistant. Twenty eight of 73 isolates were resistant to all antibiotics. Agarose gel electrophoresis of chromosomal DNA exhibited that 59 isolates (80.8%) of *P. aeruginosa* had type A flagellin while only 14 isolates (19.2%) had type b flagellin. Given the antibiotic failure treatment, it appears that alternative ways such as immunity to prevent of these infections could be informative. Our survey of flagellin profiling of multidrug-resistant *P. aeruginosa* isolates exhibited high frequency of type a flagellin as a major virulence factor has important role of immunity against infections caused by MDRPA. Functional surveillance of multidrug-resistant *P. aeruginosa* in order to prevention of resistance dissemination is necessary.

Keywords: *Pseudomonas aeruginosa*; Multidrug-Resistant; Flagellum.

INTRODUCTION

Pseudomonas aeruginosa as a nosocomial pathogen is the major cause of infection in burn centers, especially in Iran [1]. This bacterium is responsible for a broad spectrum disease that can be ranged from urinary or wound infections to bacteremia, endocarditis, multi-organ failure and death [2]. Overall, *P. aeruginosa* infections are associated with high mortality and morbidity rates in burn patients of developing countries. Increase exposure to antibiotics, indiscriminate use of them in the treatment of burn infections and development of intrinsic and acquired resistance mechanisms has promoted the rapid development of multiple resistances among *P. aeruginosa* isolates [1-3]. Nosocomial infections of multidrug-resistant P. *aeruginosa* (MDRPA) are a growing concern in hospitalized patients in burn centers [4]. Remarkable capacity of this bacterium in resistance to many drugs have commonly been